

EXHIBIT 2

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EXHIBIT 2.A

Patent 10,218,606	Hangouts and Duo
1. A method for routing communications in a packet switched communication system between a first participant device associated with a first participant and a second participant device associated with a second participant, the first and second participant devices being associated with first and second network elements of the communication system, respectively, the method comprising:	<p>Hangouts and Duo route a communication in a packet switched communication system between a first participant device associated with a first participant and a second participant device associated with a second participant, the first and second participant devices being associated with first and second network elements.</p> <p>The first participant device and the second participant device each comprise a mobile device running a version of the Hangouts or Duo application. These mobile devices are coupled to a network of servers and gateways controlled by Google. Hangouts and Duo utilize multiple servers in nodes and/or clusters each connected to multiple mobile devices and networked via local and wide area networks. Hangouts and Duo allow a mobile device running the Hangouts or Duo application to send a communication to another mobile device that is also running the Hangouts or Duo application.</p>

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 Hangouts

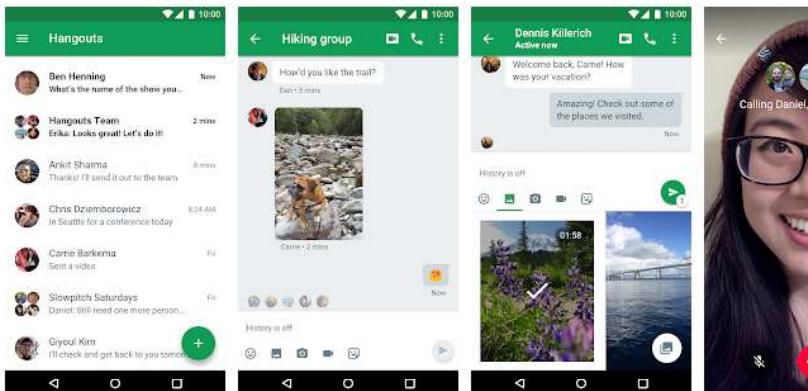
Google LLC Communication 4,443,667 

Everyone

This app is compatible with your device.

Add to Wishlist

Install



Use Hangouts to keep in touch. Message contacts, start free video or voice calls, and hop on a conversation with one person or a group.

<https://play.google.com/store/apps/details?id=com.google.android.talk&hl=en>

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App Store Preview

This app is available only on the App Store for iPhone and iPad.

Hangouts 4+
Google LLC

#6 in Social Networking
4.3, 39.3K Ratings

Free

Screenshots iPhone iPad

Message a friend or start a group conversation

Connect anytime with free voice and video calls

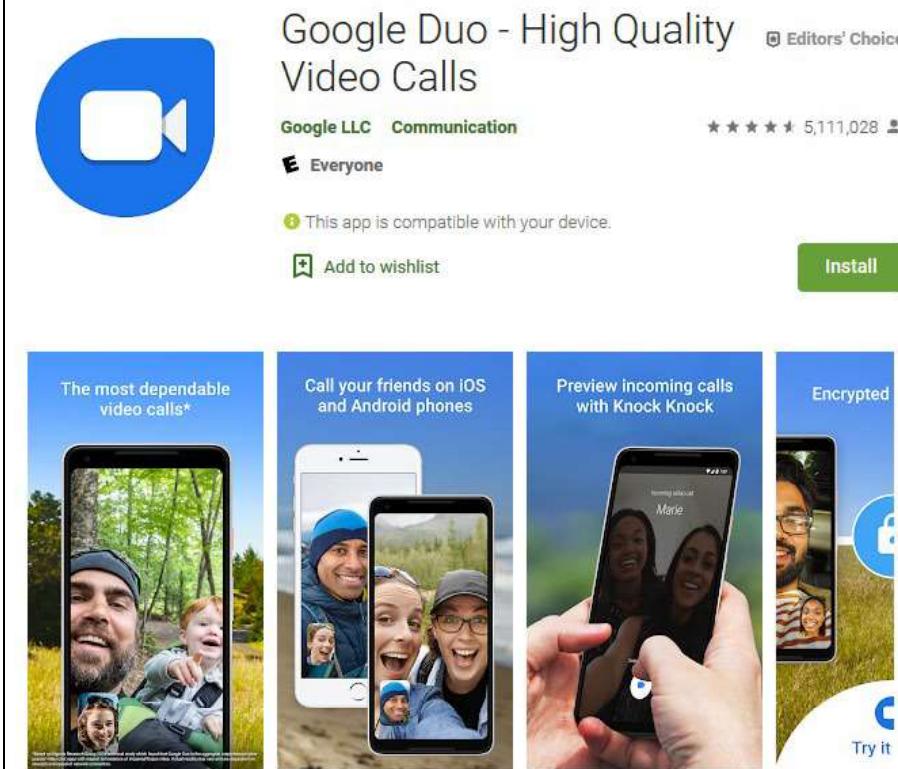
Share your recent photos and videos

Say more with stickers, photos, and emoji

Use Hangouts to keep in touch. Message friends, start free video or voice calls, and hop on a conversation with one person or a group. Say more with photos, stickers, and emoji.

<https://apps.apple.com/us/app/hangouts/id643496868>

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Google Duo - High Quality Video Calls

Google LLC - Communication

Everyone

This app is compatible with your device.

Add to wishlist

Install

The most dependable video calls*

Call your friends on iOS and Android phones

Preview incoming calls with Knock Knock

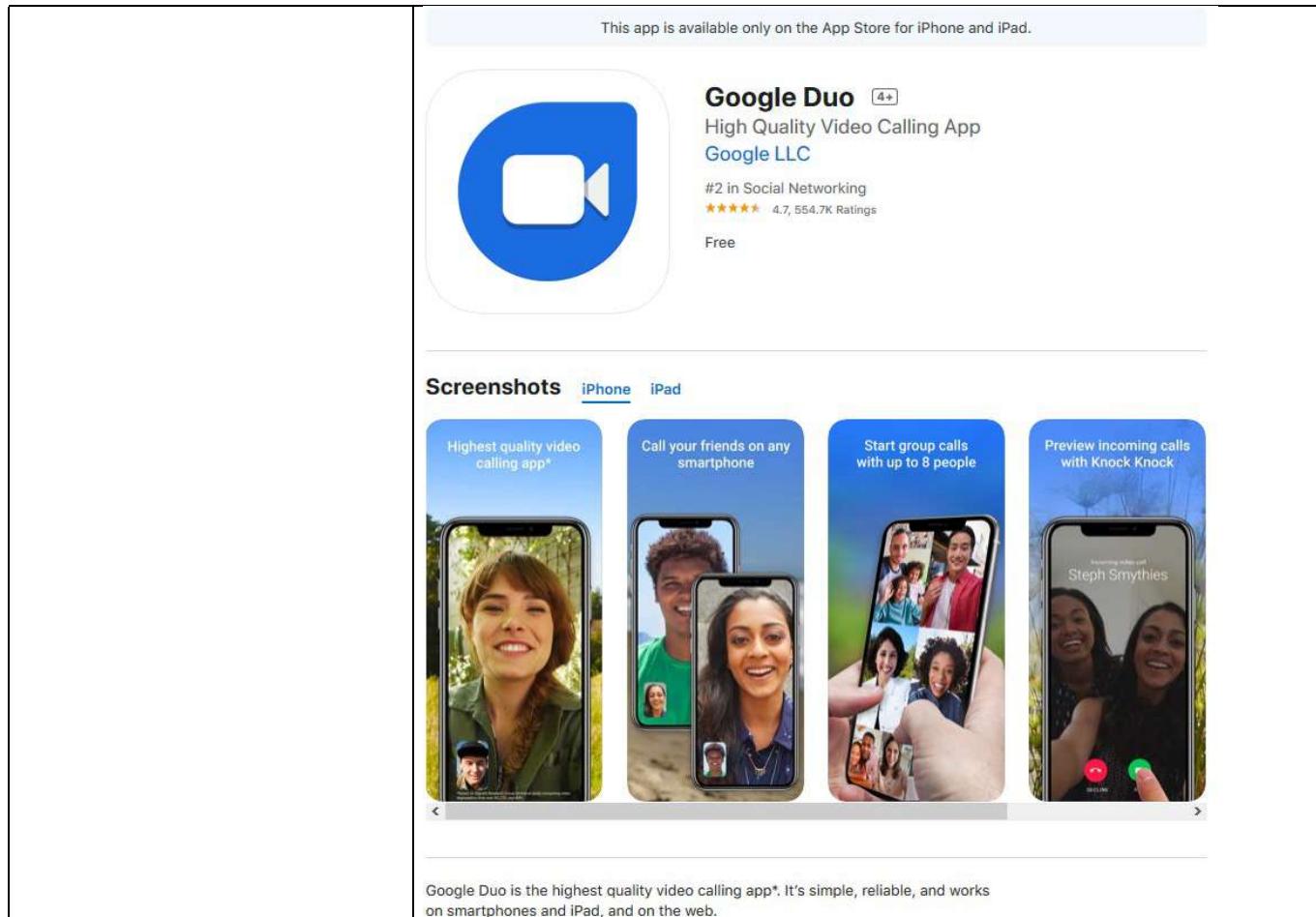
Encrypted

Try it

Google Duo is the highest quality video calling app*. It's simple, reliable, and works on smartphones, tablets, Google Nest, and on the web.

<https://play.google.com/store/apps/details?id=com.google.android.apps.tachyon>

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	<p>https://apps.apple.com/us/app/google-duo/id1096918571</p> <p>“Simple, high quality video calls for smartphones, tablets, computers, and Smart Displays like the Google Nest Hub Max.” <i>See:</i> https://duo.google.com/about/</p>
<p>receiving, by at least one processor, a second participant identifier associated with the second participant device, in response to initiation of a communication from the first participant device to the second participant device, the first participant device being associated with a first participant identifier;</p>	<p>Hangouts and Duo include processing by the mobile application, running on the mobile device as well as processing by one or more Google servers. One or more of the processors on the mobile device receives an input from the user to select the second participant. The user input, which may comprise a partial name associated with a user and/or a partial number associated with a user represents the second participant identifier. The first participant is registered with Hangouts or Duo and has a Hangouts or Duo identifier, which represents a first participant identifier.</p> <p>Start a video call</p> <p>You can connect with family, friends, or coworkers through face-to-face video calls. Video calls can include up to 25 people.</p> <p>Computer Android iPhone & iPad</p> <hr/> <p>Start a video call</p> <ol style="list-style-type: none"> 1. Open the Hangouts app . 2. At the bottom right, tap Compose . 3. Tap New Video Call. 4. Type and select the names of people you want to invite to your video call. 5. Tap Video call . 6. When you're done, tap End call . <p>https://support.google.com/hangouts/answer/3110347?co=GENIE.Platform%3DAndroid</p>

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	<h2>Make calls with Google Duo</h2> <p>You can make video or audio calls to anyone in your contacts. Learn how you can find and add people to call.</p> <p>All calls, including international ones, are made through your mobile data plan or a Wi-Fi connection, so you won't use your mobile minutes. If you use your mobile data, charges may apply.</p> <p>https://support.google.com/duo/answer/7538935?co=GENIE.Platform%3DAndroid</p>
causing the at least one processor to access at least one memory storing a first participant profile identifying at least one first participant attribute;	One or more processors on the mobile device access data stored on the mobile device and/or data stored on a Google server to locate the contact list for the first participant. This information is specific to the first participant and represents at least part of the first participant profile.
processing the second participant identifier and the at least one first participant attribute, using the at least one processor, to produce a new second participant identifier based on at least one match between the second participant identifier and the at least one first participant attribute;	One or more processors on the mobile device process the selection of a user and retrieve a Hangouts or Duo identifier or phone number associated with the displayed information. When the user enters a partial name or partial number into the search box, a list of matching contacts is presented. Each of the listed contacts is a Hangouts or Duo user and has an associated identifier. The Hangouts or Duo identifier, username or phone number of a selected contact represents the new second participant identifier.
processing the new second participant identifier, using the at least one processor, to determine whether the second network element is the same as the first network element;	Hangouts and Duo determine if the first participant device is associated with the same network element as the second network element. For example, the first participant device and the second participant device may be serviced by the same node or cluster or a different node or cluster. On information and belief, Hangouts and Duo are large scale services that operates on multiple distributed nodes coupled to each other over a wide area network. On information and belief, the Hangouts and Duo network elements are organized into nodes and clusters and geographically distributed. The first participant device and the second participant device may be serviced by the same network element or cluster or a different network element or cluster. Thus, routing of communications between devices can take place on the same node and/or cluster or may require that communications go between nodes and/or clusters.

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	<p>https://cloud.google.com/kubernetes-engine/docs/concepts/cluster-architecture https://cloud.google.com/kubernetes-engine/docs/concepts/node-pools</p>
when the second network element is determined to be the same as the first network element, producing a routing message identifying a first network address associated with the first network element, using the at least one processor; and	<p>Hangouts and Duo produce a routing message that identifies an address of an address associated with the first network element when the first and second network elements are the same.</p> <p>On information and belief, Hangouts and Duo nodes and/or clusters operate to serve multiple devices. Thus, in the case that the first and second devices are served by the same Hangouts or Duo node and/or cluster, a routing message is produced that causes the communication to be established through the same Hangouts or Duo node and/or cluster.</p>
when the second network element is determined not to be the same as the first network element, producing a routing message identifying a second network address associated with the second network element, using the at least one processor;	<p>Hangouts and Duo produce a routing message that identifies an address associated with the second network element when the first and second network elements are not the same.</p> <p>On information and belief, Hangouts and Duo nodes and/or clusters are geographically distributed and coupled via the Internet and/or other wide area networks. In the case that the first and second devices are served by different Hangouts or Duo nodes and/or clusters, a routing message is produced that causes the communication to be established from the first node and/or cluster to the second node and/or cluster.</p>
wherein the packet switched communication system attempts to establish the communication from the first participant device to the second participant device based on at least one network address identified in the routing message.	Hangouts and Duo use Google's communication system infrastructure to attempt to establish communication from the first participant device to the second participant device.
14. The method of claim 1, wherein the packet switched communication system is controlled by a system operator, the method further comprising:	Hangouts and Duo are controlled by Google.

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receiving a third participant identifier associated with a third participant device, wherein the third participant device is not associated with either the first network element or the second network element; and	Hangouts and Duo allow communications to be placed to multiple parties. Subsequent to the communication of claim 1, a communication may be established from the first participant device to a third participant device. For example, after establishing a communication between the first communication device and the second communication device, both of which are Hangouts or Duo users, the first participant device may attempt to establish a communication with a third participant device identified by a phone number that is not a Hangouts or Duo user (e.g., a mobile phone or landline on the PSTN).
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	<h2>Make a phone call with Hangouts</h2> <p>You can use Hangouts to call international and domestic phone numbers.</p> <p>Computer Android iPhone & iPad</p> <hr/> <h3>Before you start</h3> <ul style="list-style-type: none"> Download the app: Download the latest version of the Hangouts app. Check your phone: You need to have Apple mobile operating system version 8 or higher. Find out about data rates: If you use your data connection (and your phone's data plan) to make a phone call, ask your service provider for details about costs. See availability: Learn more about where calling is available. Get a Google Account: Sign up for a Google account, if you don't already have one. Contacts: The first time you start a new conversation, Hangouts will ask if it can use your iPhone contacts. Tap OK. <h3>Make a phone call</h3> <p>When you make a call in Hangouts, your Google Voice, Project Fi, or verified phone number will show as the outbound caller ID. Learn how to verify your phone number.</p> <ol style="list-style-type: none"> Open the Hangouts app . Tap the Dialer tab . At the bottom, tap Dialpad . Enter a phone number. You can also search for them in the Contacts tab . Tap the contact's name or tap Call . <p>https://support.google.com/hangouts/answer/3187125</p>
producing a routing message identifying a gateway to the PSTN when the destination device is not associated with a Hangouts or Duo user. This causes a further communication to be established to the third participant device.	Hangouts and Duo produce a routing message identifying a gateway to the PSTN when the destination device is not associated with a Hangouts or Duo user. This causes a further communication to be established to the third participant device.

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to cause a further communication to be established to the third participant device.	
15. The method of claim 14 wherein at least a portion of the external communication system is a public switched telephone network (PSTN) communication system, and wherein the third participant identifier comprises a public switched telephone network (PSTN) number.	Hangouts and Duo can route a communication to the PSTN in the case that the third participant identifier is a PSTN number.

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EXHIBIT 2.B

Patent 10,218,606	Google Home
1. A method for routing communications in a packet switched communication system between a first participant device associated with a first participant and a second participant device associated with a second participant, the first and second participant devices being associated with first and second network elements of the communication system, respectively, the method comprising:	<p>Google Home routes a communication in a packet switched communication system between a first participant device associated with a first participant and a second participant device associated with a second participant, the first and second participant devices being associated with first and second network elements.</p> <p>The first participant device and the second participant device each comprise a Google Home device, for example, Google home automation and smart speaker devices including devices branded as Google Home and Google Nest. These devices are coupled to a network of servers and gateways controlled by Google. On information and belief, Google Home utilizes multiple servers in nodes and/or clusters each connected to multiple communication devices and networked via local and wide area networks. Google Home allows a device to communicate with another Google Home device.</p>

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	<h2>Set up your Google Nest or Google Home speaker or display</h2> <p>The Google Home app will walk you through the steps to set up your Google Nest or Google Home speaker or display.</p> <p>Android iPhone & iPad</p> <hr/> <h3>What you need to get started</h3> <ul style="list-style-type: none"> • A Google Nest or Home speaker or display. • Latest version of the Google Home app . • Latest version of the Google app . • A Google Account • A mobile phone or tablet that: <ul style="list-style-type: none"> • Has Android 5.0 or higher. • Works with 2.4 GHz and 5GHz Wi-Fi network (a WPA-2 Enterprise network won't work) • Has Bluetooth turned on. • An internet connection and secure wireless network. • If you already use Duo for video calling, make sure Duo is signed in with the same Google Account as your speaker or display. <h3>Get started</h3> <ol style="list-style-type: none"> 1. Plug in your speaker or display. 2. Connect your mobile device to the Wi-Fi network that you'll use for your speaker or display. 3. On your phone or tablet, open the Google Home app . 4. Follow the steps. <ol style="list-style-type: none"> a. If you don't see the steps to set up your device: <ol style="list-style-type: none"> i. At the top left, tap Add  > Set up device  > Set up new devices in your home . ii. Follow the remaining steps. <p>https://support.google.com/googlenest/answer/7029485?co=GENIE.Platform%3DAndroid</p>
receiving, by at least one processor, a	Google Home includes processing by the smart speaker as well as processing by one or more Google

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<p>second participant identifier associated with the second participant device, in response to initiation of a communication from the first participant device to the second participant device, the first participant device being associated with a first participant identifier;</p>	<p>servers. One or more of the processors on the mobile device and/or Google servers receives an input from the user to select the second participant. The user input, which may comprise a spoken name or a spoken number associated with a user represents the second participant identifier. The first participant is registered with Google and has an identifier and/or username, which represents a first participant identifier.</p> <p>Make Duo calls with your Google Nest or Google Home speaker or display</p> <p>You can make and receive calls with other Duo users on your Google Nest or Google Home speaker or display using Duo.</p> <p>Duo calls are available on the following products:</p> <ul style="list-style-type: none"> • Displays (Google Nest Hub and Nest Hub Max): All countries and languages where Nest Hub and Nest Hub Max are sold. • Speakers (Google Home, Nest Mini, Home Mini, Home Max, Google Nest Wifi point): All countries and languages where Google Home, Google Nest Mini, Google Home Mini, Google Home Max, or Nest Wifi points are sold. <p>Note:</p> <ul style="list-style-type: none"> • You can only call or receive calls from other Duo users. • You cannot make emergency calls using Duo. • The device used to contact your Nest display must have a camera in order for video calling to work. <p>https://support.google.com/googlenest/answer/9165631?co=GENIE.Platform%3DAndroid</p>
<p>causing the at least one processor to access at least one memory storing a first participant profile identifying at least one first participant attribute;</p>	<p>One or more processors on the mobile device access data stored on the mobile device and/or data stored on a Google server to locate the contact list for the first participant. This information is specific to the first participant and represents at least part of the first participant profile.</p>
<p>processing the second participant identifier and the at least one first participant attribute, using the at least one processor, to produce a new second participant</p>	<p>One or more processors on the mobile device process the selection of a user and retrieve a Hangouts identifier or phone number associated with the displayed information. When the user speaks a contact name, a matching contact is selected. The matching contact is a Google user and has an associated identifier. The Google identifier, username or phone number of a selected contact</p>

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identifier based on at least one match between the second participant identifier and the at least one first participant attribute;	<p>represents the new second participant identifier.</p> <p>Call someone</p> <p>To control your video call, use your voice or your screen.</p> <p>Important: You must turn on personal results to call your contacts.</p> <p>Start a call</p> <p>Say "Ok Google," then:</p> <ul style="list-style-type: none"> • Google Nest Hub Max, Google Nest Hub: Say "Video call [contact]" or "Call [contact] on Duo." • Google Home, Google Home Max, Google Nest Mini, Google Home Mini, Nest Mini, Nest Wifi point: Say "Call [contact] on Duo." • If you see a missed call on the screen, tap it. <p>https://support.google.com/googlenest/answer/9165631?co=GENIE.Platform%3DAndroid</p>
processing the new second participant identifier, using the at least one processor, to determine whether the second network element is the same as the first network element;	<p>Google Home determines if the first participant device is associated with the same network element as the second network element. For example, the first participant device and the second participant device may be serviced by the same node or cluster or a different node or cluster. On information and belief, Google Home is a large scale service that operates on multiple distributed nodes coupled to each other over a wide area network. On information and belief, the Google Home network elements are organized into nodes and clusters and geographically distributed. The first participant device and the second participant device may be serviced by the same network element or cluster or a different network element or cluster. Thus, routing of communications between devices can take place on the same node and/or cluster or may require that communications go between nodes and/or clusters.</p> <p>https://cloud.google.com/kubernetes-engine/docs/concepts/cluster-architecture https://cloud.google.com/kubernetes-engine/docs/concepts/node-pools</p>
when the second network element is determined to be the same as the first network element, producing a routing message identifying a first network address	<p>Google Home produces a routing message that identifies an address of an address associated with the first network element when the first and second network elements are the same.</p> <p>On information and belief, Google Home nodes and/or clusters operate to serve multiple devices.</p>

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associated with the first network element, using the at least one processor; and	Thus, in the case that the first and second devices are served by the same Google Home node and/or cluster, a routing message is produced that causes the communication to be established through the same Google Home node and/or cluster.
when the second network element is determined not to be the same as the first network element, producing a routing message identifying a second network address associated with the second network element, using the at least one processor;	<p>Google Home produces a routing message that identifies an address associated with the second network element when the first and second network elements are not the same.</p> <p>On information and belief, Google Home nodes and/or clusters are geographically distributed and coupled via the Internet and/or other wide area networks. In the case that the first and second devices are served by different Hangouts nodes and/or clusters, a routing message is produced that causes the communication to be established from the first node and/or cluster to the second node and/or cluster.</p>
wherein the packet switched communication system attempts to establish the communication from the first participant device to the second participant device based on at least one network address identified in the routing message.	Google Home uses Google's communication system infrastructure to attempt to establish communication from the first participant device to the second participant device.
14. The method of claim 1, wherein the packet switched communication system is controlled by a system operator, the method further comprising:	Google Home is controlled by Google.
receiving a third participant identifier associated with a third participant device, wherein the third participant device is not associated with either the first network element or the second network element; and	<p>Google Home allows communications to be placed to multiple parties. Subsequent to the communication of claim 1, a communication may be established from the first participant device to a third participant device.</p> <p>For example, after establishing a communication between the first communication device and the second communication device, both of which are Google Home users, the first participant device may attempt to establish a communication with a third participant device identified by a phone</p>

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number that is not a Google user (e.g., a mobile phone or landline on the PSTN).

Make telephone calls on speakers and displays

With Hands-Free Calling on Google Nest or Google Home speakers or displays, you can call friends, family, and businesses using just your voice. This functionality is available in the U.S., U.K., and Canada (English and French) (excluding territories). If you're in Australia, you can [make mobile calls on Google speakers and displays with Telstra](#).

[Android](#) [iPhone & iPad](#)

What you need

1. The latest version of the Google Home app.
2. Google Home firmware version is [1.39154941](#) or higher. Here's how to [check your firmware version](#).
3. Google app version is 7.17 or above. To check your Google app version number,
 - a. Open the Google app  at the bottom of the screen, tap More > Settings > About > check the version number. To get the latest version, go to the Google app page on the Play Store and tap Update.
4. Your Google Account is linked to Google Home.
5. You are located in the U.S., UK or Canada.
Note: Continental U.S., Hawaii and Alaska only. US territories are not currently supported.
6. Your Google Assistant language set to English US, English UK, Canadian English, or French Canadian.

Who you can call

- US or Canada phone numbers from a US or Canada number
- UK phone numbers from a UK number
- International and premium (1-900) numbers if you linked your Google Home to a:
 - Google Fi number
 - A Google Voice number that [has credits](#).

Note: Google Fi and Google Voice are only available in the US.

You can't make calls to emergency services.

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	https://support.google.com/googlenest/answer/7363847?co=GENIE.Platform%3DAndroid
producing a routing message identifying a gateway to an external communication system that is not controlled by the system operator, using the at least one processor, to cause a further communication to be established to the third participant device.	Google Home produces a routing message identifying a gateway to the PSTN when the destination device is not associated with a Google user. This causes a further communication to be established to the third participant device.
15. The method of claim 14 wherein at least a portion of the external communication system is a public switched telephone network (PSTN) communication system, and wherein the third participant identifier comprises a public switched telephone network (PSTN) number.	Google Home can route a communication to the PSTN in the case that the third participant identifier is a PSTN number.